

What is claimed is:

1. A signal bit rate determination method, comprising:  
determining durations, each duration corresponding  
5 to time elapsed between detection of a first logical  
event of a signal and a second logical event of the  
signal;

selecting a first duration from the durations, and  
incrementing a first counter for each occurrence of the  
10 first duration to provide a first total value;

incrementing a second counter for each occurrence  
of a second duration to provide a second total value,  
the second duration corresponding to the selected  
duration plus a time interval;

15 determining a bit rate of the signal using a  
weighted average corresponding to the first and the  
second total values.

2. The method of claim 1, wherein determining one of  
20 the durations includes counting time intervals between  
detection of the first logical event and detection of  
the second logical event.

3. The method of claim 1, wherein the first logical event is detected by sensing a leading edge of a pulse corresponding to the signal.

5 4. The method of claim 1, wherein the second logical event is detected by sensing a leading edge of a pulse corresponding to the signal.

10 5. The method of claim 1, wherein the first duration is the shortest duration among the plurality of durations.

15 6. The method of claim 1, wherein the bit rate is a mathematical inverse of one-half of the weighted average.

7. The method of claim 1, wherein the bit rate is a mathematical inverse of the weighted average.

20 8. A signal bit rate determination method, comprising:  
determining a plurality of durations, each duration corresponding to time elapsed between detection of a first logical event of a signal and detection of a second logical event of the signal;

selecting a first duration from among the plurality  
of durations;

counting durations among the plurality of durations  
corresponding to the selected duration to provide a  
5 first total value;

counting durations among the plurality of durations  
corresponding to a second duration to provide a second  
total value, the second duration corresponding to the  
first duration plus a time interval;

10 determining a weighted average for the first and  
the second total values, and for the first and the  
second durations; and

setting a bit rate of the signal using the weighted  
average.

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9. The method of claim 8, wherein the first duration  
is the shortest of the plurality of durations.

10. The method of claim 8, wherein determining one of  
20 the plurality of durations includes counting time  
intervals between detection of the first logical event  
and detection of the second logical event.

11. The method of claim 8, wherein the first logical event is detected by sensing a leading edge of a pulse corresponding to the signal.

5 12. The method of claim 8, wherein the second logical event is detected by sensing a leading edge of a pulse corresponding to the signal.

13. The method of claim 8, further comprising:  
10 determining whether the first total value is less than a threshold value; and  
if the first total value is less than the threshold value, then selecting another duration from among the plurality of durations, the another duration being the  
15 next shortest of the plurality of durations.

14. The method of claim 8, wherein determining the first total value includes:

setting a counter to zero; and  
20 evaluating each duration of the plurality of durations to determine whether each duration is approximately equivalent to the selected duration, and incrementing a counter for each duration that is approximately equivalent to the first duration.

15. The method of claim 8, wherein determining the weighted average includes:

    multiplying the selected duration by the first total value to provide a first product;

5       multiplying the second duration by the second total value to provide a second product;

    adding the first product and the second product to provide a sum of the products;

10       adding the first total value and the second total value to provide a sum of the total values; and

    dividing the sum of the products by the sum of the total values to determine the weighted average.

16. The method of claim 8, wherein the bit rate is  
15       approximately equivalent to a mathematical inverse of one-half of the weighted average.

17. The method of claim 8, wherein the bit rate is a  
20       mathematical inverse of the weighted average.

18. The method of claim 8, wherein the plurality of durations are determined prior to counting those durations that are approximately equivalent to the selected duration.

19. The method of claim 8, wherein counting those durations that are approximately equivalent to the selected duration begins prior to counting a last of the plurality of durations.

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20. The method of claim 8, wherein a mathematical inverse of the weighted average is used to set the bit rate of the signal.

10 21. An article of manufacture comprising a computer usable medium having computer readable program code instructions embodied therein for causing a computer to determine a bit rate of a signal, the instructions having:

15 a computer readable program code module to determine durations, each duration corresponding to time elapsed between detection of a first logical event of the signal and detection of a second logical event of the signal;

20 a computer readable program code module to select a first duration from among the plurality of durations;

a computer readable program code module to count durations among the plurality of durations corresponding to the selected duration to provide a first total value;

a computer readable program code module to count those durations corresponding to a second duration to provide a second total value, the second duration corresponding to the selected duration plus a time  
5 interval;

a computer readable program code module to determine a weighted average for the first and the second total values, and for the first duration and the second duration; and

10 a computer readable program code module to set a bit rate of the signal using a weighted average.

22. The article of manufacture of claim 21, wherein the first duration is the shortest of the plurality of  
15 durations.

23. The article of manufacture of claim 21, wherein the computer readable program code instructions for causing the computer to determine a plurality of durations  
20 include a computer readable program code module for counting time intervals occurring between detection of the first logical event and detection of the second logical event.

24. The article of manufacture of claim 21, wherein the instructions further include a computer readable program code module to cause a computer to determine whether the first total value is less than a threshold value, and if  
5 the first total value is less than the threshold value, the computer selects another duration from among the plurality of durations, the another duration being the next shortest of the plurality of durations.

10 25. The article of manufacture of claim 21, wherein the computer readable program code module to cause the computer to count durations and provide the first total value includes:

a computer readable program code module to cause  
15 the computer to set a counter to zero;

a computer readable program code module to cause the computer to evaluate each duration of the plurality of durations to determine whether each duration is approximately equivalent to the selected duration; and

20 a computer readable program code module to cause the computer to increment a counter for each duration that is approximately equivalent to the selected duration.



26. The article of manufacture of claim 21, wherein the computer readable program code module to cause the computer to determine the weighted average includes:

5 a computer readable program code module to cause the computer to multiply the selected duration by the first total value to provide a first product;

a computer readable program code module to cause the computer to multiply the second duration by the second total value to provide a second product;

10 a computer readable program code module to cause the computer to add the first product and the second product to provide a sum of the products;

15 a computer readable program code module to cause the computer to add the first total value to the second total value to provide a sum of the total values; and

a computer readable program code module to cause the computer to divide the sum of the products by the sum of the total values to determine the weighted average.

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27. The article of manufacture of claim 21, wherein a mathematical inverse of the weighted average is used to set the bit rate of the signal.

28. A bit rate determining system, comprising a  
computer connected to a transmission line carrying a  
signal having logical events, the logical events  
including logical ones and logical zeros, the computer  
5 having software running thereon, the software being  
capable of instructing the computer to:

determine durations, each duration corresponding to  
time elapsed between detection of a first logical event  
of the signal and a second logical event of the signal;

10 select a first duration from the durations, and  
increment a first counter for each occurrence of the  
first duration to provide a first total value;

increment a second counter for each occurrence of a  
second duration to provide a second total value, the  
15 second duration corresponding to the selected duration  
plus a time interval;

determine a bit rate of the signal using a weighted  
average corresponding to the first and the second total  
values.

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29. The system of claim 28, wherein the computer has a  
system clock and the computer determines one of the  
durations by counting time intervals identified by the  
system clock.

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30. The system of claim 28, wherein at least one of the logical events is detected by sensing a leading edge of a pulse corresponding to the signal.

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